Rational Pharmaceutical Management Plus

New Systems and Procedures for Drug Management at the Central Medical Stores in Windhoek Namibia: Trip Report

Vimal S. Dias.

January, 2004

Rational Pharmaceutical Management Plus
Center for Pharmaceutical Management
Management Sciences for Health
4301 N. Fairfax Drive, Suite 400
Arlington, VA 22203
Phone: 703-524-6575
Fax: 703-524-7898
E-mail: rpmplus@msh.org

This report was made possible through support provided by the U.S. Agency for International Development, under the terms of cooperative agreement number HRN-A-00-00-00016-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

About RPM Plus

The Rational Pharmaceutical Management Plus (RPM Plus) Program, funded by the U.S. Agency for International Development (cooperative agreement HRN-A-00-00-00016-00), works in more than 20 developing countries to provide technical assistance to strengthen drug and health commodity management systems. The program offers technical guidance and assists in strategy development and program implementation both in improving the availability of health commodities—pharmaceuticals, vaccines, supplies, and basic medical equipment—of assured quality for maternal and child health, HIV/AIDS, infectious diseases, and family planning and in promoting the appropriate use of health commodities in the public and private sectors.

Abstract

Recommended Citation

Dias, Vimal S. 2004. *New Systems and Procedures for Drug Management at the Central Medical Stores in Windhoek Namibia.* Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

Contents

Acronyms v
Introduction 1
Work completed 3
A. Introduction 3
B. Analysis of Key CMS Operations 3
C. Analysis of Operations for Receiving CMS Supplies 3
1. Procedure for Receiving Supplies 3
2. Important Observations 6
3. List of Key Receiving Documents 7
D. Analysis of CMS Operations for Distributing Supplies 7
1. Procedure for Issuing and Distributing CMS Supplies 7
2. Important Observations 10
3. List of Key Issuing Documents 10
E. Development of a New Inventory Control System 11
1. Key Features of Proposed Systems 12
F. Development of an Inventory Management Package (IMP) using Spread Sheets. 17
G. Strengthen Syspro's Capacity 17
H. Work Plan 18
NEXT STEPS 21
A. CMS Stock Taking 21
B Data Collection for Inventory Management 21
C. Strengthen Syspro's Capacity 22
D. Human Resource Needs 22
E. Creation of a New Assembly Section 22
KEY OBSERVATIONS AND RECOMMENDATIONS 25
A. Major Observations 25
B. Major Recommendations 26

Acronyms

BS	Buffer Stock
CMS	Central Medical Store
FEFO	First Expiry First Out
GRN	Goods Received Note
GRN	Goods Received Note
IMP	Inventory Management Package
IP	Inventory Position
MAXSL	Maximum Stock Level
MINSL	Minimum Stock Level
MOHSS	Ministry of Health and Social Security
MSH	Management Sciences for Health
PA	Pharmacist's Assistant
PO	Porchase Orden
PRV	Purchase Receipt Voucher
RMS	Regional Medical Store
RP	Review Period
USAID	Unite State Agency for International Development
VEN	Very Essential, Essential and Non Essential Drug Classification System

Introduction

This trip report describes nature of work undertaken in Namibia between the 19th and 29th January 2004. Activities completed during this visit were mainly focused on completing a Work Plan for strengthening Inventory Management, Storekeeping and related management systems and procedures employed at the Central Medical Stores (CMS), at Windhoek Namibia.

This 2 week assignment was undertaken in close collaboration with Francis Nyame the team leader and the Information Technology Consultant, Andy Marsden from Management Sciences for Health (MSH).

Work completed

A. Introduction

The work undertaken during this visit was mainly confined to following activities.

a. Analysis of Key CMS Operations
b. Analysis of CMS Operations for Receiving Supplies.
c. Analysis of CMS Operations for Distributing Supplies.
d. Development of a New Inventory Control System for CMS
e. Development of an Inventory Management Package (IMP) using Spread Sheets.
f. Assess how Syspro Capacity could be strengthened for Meeting Needs of New Inventory Control and Related Systems.

B. Analysis of Key CMS Operations

A meeting attended by senior CMS staff and key persons working on the shop floor was held on 1.21.04 at CMS for obtaining details of how key operations such as; procurement, receiving, storekeeping and dispatching drugs and medical supplies is currently taking place at CMS. This process mapping exercise provided a very good opportunity for RPM plus consultants to obtain valuable information regarding key operations, role played by the computer system Syspro for managing inventories, strengths and weaknesses of current systems.

For a complete account of the results of the Process Mapping exercise, see Andy Marsden's trip report.

C. Analysis of Operations for Receiving CMS Supplies

Current systems and procedures employed for receiving new supplies from suppliers at the CMS Receiving Section was analyzed. This involved; a study of key operations, analysis of documents used in connection with receiving supplies, use of Syspro and interviewing key staff members involved in undertaking these operations.

1. Procedure for Receiving Supplies

Following are a set of important steps and procedures followed from the time of initiating a new order by the CMS Procurement Section until the order is received at CMS and taken to stock at individual warehouses.

1. *Activity*: Raising a Purchase Order (PO). The Procurement Pharmacist prepares a Procurement requisition using an Excel spreadsheet once a week to identify

products needing reorder and reorder quantities. This document is amended if necessary and approved by the Distribution Pharmacist to initiate procurement.

New orders are initiated by the Procurement Section at CMS by printing a PO in 4 copies on pre-printed paper using Syspro. See Appendix No. 1 for a specimen of a PO. Each PO contains only one item. The first Blue copy is forwarded to the supplier and the other 3 copies (red, green & black) are forwarded at the time of placing the order to the receiving section.

Performed by: Procurement Pharmacist

Documents used / Generated: PO & Goods Received Note (GRN) produced by Syspro. See Appendix No.2 for a specimen GRN.

2. *Activity*: Receiving supplies.
   Once a new consignment of drugs is received at CMS Receiving Bay, it is checked against the PO / GRN and Invoice. See Appendix No.3 for a supplier Invoice.

   Performed by: Clerk or a Pharmacist's Assistant.

3. *Activity:* After inspection, the quantity received is entered by hand in the cage "Quantity Received" and any undelivered quantity if any in the cage "To Follow' of the Goods Received Note (GRN). A GRN is produced per product and if multiple batches of the same product are received, each batch is given a separate GRN.

   In case there is a balance quantity to be delivered against a PO the receiving section would notify the Procurement clerk. The Procurement Clerk would print an "Extract Order" in triplicate (red, green & black) for the outstanding order quantity. See Appendix No. 4 for a specimen of "Extract Order". These documents carry the same PO number, but are not signed by the Procurement Pharmacist.

   Performed by: Clerk or a Pharmacist's Assistant.

4. *Activity*: Printing a Transfer Document. A Transfer Document for each item is printed using Syspro at the Receiving Section. This will put the quantity received as the "quantity under inspection" in Syspro. See Appendix No. 5 for a specimen Transfer Document.

   Information found in this document is some what similar to what is contained in GRN. This certifies that the consignment received has been transferred to a warehouse. The Transfer note is signed and dated.

A Purchase Order Receipt is also printed using Syspro for non drug products bearing a Purchase Receipt Voucher (PRV) number. Information contained in the PRV is similar to what is in the GRN. See Appendix No. 6 for a specimen of a PRV.

Performed by: Transfer Document is printed by a Clerk or a Pharmacist's Assistant and signed and dated by the Warehouse Clerk or a Pharmacist's Assistant.

Documents used / Generated: Transfer Note

5. *Activity*: Collate a complete set of receiving documents pertaining to the product and post them to one of 9 trays maintained for each of the 9 warehouses.
There are 9 sets of trays marked A,B,C,D,E,F,G,H & I, at the Receiving Office for keeping receiving documents pertaining to individual warehouses.

Performed by : Clerk or a Pharmacist's Assistant.

Document used / Generated: GRN (red, green & black copies), Transfer Document, Supplier Invoice, Way Bill, Delivery Note (See Appendix No.7 for a specimen).

6. *Activity*: Checking and acceptance by warehouse staff. Warehouse staff will check for documents in trays each morning which needs processing. Products are once again checked for identity and correct quantity by the respective Warehouse Clerks in order to finalize the GRN.

Performed by: Warehouse Clerk.

7. *Activity*: Transfer of goods and documents. The Warehouse clerk enters information in the "Order Controlling System Register" and thereafter removes documents and the products to the respective warehouse. Small items are moved by a trolley and heavy items using a pallet truck.

Performed by : Warehouse Clerk enters information in register and supplies are moved to the warehouse by a Work hand.

Document used / Generated: Order Controlling System Register.

8. *Activity*: Store product in correct bin location and update stock balance in Bin Card. Once a product reaches a particular warehouse, the stock on hand is checked against the Bin Card balance. Thereafter, the product is placed in the appropriate bin location and Bin Card balance is updated.

Performed by: Warehouse clerk and Work Hands.

Document used / Generated: Bin Card. See Appendix No. 8 for a specimen.

9. *Activity:* Update Syspro stock balance. Syspro is activated using any of the computers in the distribution section to add fresh supplies received to the stock on hand. This will debit the amount listed as "quantity under inspection" and credit the stock on hand in Syspro.

   Performed by : Warehouse Clerk.

10. *Activity*: Processing of documents. The warehouse clerk would return all documents to the Receiving Section and the clerk of the Receiving Section would enter information and sign the "Order Controlling System Register" to acknowledge receipt of documents.

    Receiving section would send the red copy of GRN to the Filing Office / CMS Archives while the green and black copies will be sent together with all other documents to the Accounting Office for making supplier payments.

    In case of a partial shipment, the quantity outstanding (yet to be delivered) is entered in the GRN and the red copy is sent to the Procurement Clerk to initiate procurement for the missing quantity.

    Performed by: The Pharmacist's Assistant or the Clerk.

    Documents used / Generated : GRN (red, green & black copies), Transfer Document, Supplier Invoice, Way Bill, Delivery Note and Order Controlling System Register.

2. Important Observations

a. A copy of a GRN is not received by the Procurement Section. Procurement section obtains information on what has been received by using the two following Syspro reports.

- Goods In Inspection Report. – This gives information on shipments for which GRNs have been raised but stocks not accepted at warehouse.
- All daily receipts at Inspection and what has been accepted at warehouse.

b. The Receiving Section does not maintain a copy of the GRN.

c. Purchase Orders and GRNs contain information relating to only one product. In the case of GRN's, Syspro can not print information on multiple batches received against a given drug.

d. The Purchase Order and the GRNs are printed at the time of initiating an order. Quantity Received and what is yet to be received if any is entered manually on the GRN after goods are received.

3. List of Key Receiving Documents

1. Purchase Order – Appendix No.1
2. GRN – Produced by Syspro in 3 copies- Appendix No. 2.
3. Supplier Invoice – Appendix No.3
4. Delivery Note – Appendix No. 7
5. Transfer Document – Produced by Syspro - Appendix No. 5.
6. Bin Card – Appendix No. 8.
7. Purchase Order Receipt – Produced by Syspro- Appendix No.6.
8. Order Controlling System Register
9. Extract Order – Produced by Syspro in 3 copies – Appendix No. 4.

D. Analysis of CMS Operations for Distributing Supplies

Current systems and procedures employed for issuing supplies from individual CMS warehouses, transfer to the dispatch section and assembly of supplies for distribution and transporting drugs and medical supplies to customers were analyzed in detail. This involved; a study of key operations, analysis of documents used in connection with issuing of supplies, use of Syspro and interviewing key staff members involved in undertaking these operations.

1. Procedure for Issuing and Distributing CMS Supplies

The following important steps and procedures are currently followed at CMS for issuing products against customer orders.

1. *Activity*: Placing customer orders.

   Customers are normally expected to place orders at CMS reception using the Order Book (Green Book) containing preprinted product names once in 6 weeks. See Appendix No. 9 for a specimen page from the Order Book. For placing emergency orders in between scheduled ordering times, an Interim Order Form is used. See Appendix No.10 for a specimen form.

   Performed by: Individual customers.

   Document used / Generated: Order Book.

2. Activity: Obtain approval.

Order Books are forwarded for review and approval.

Performed by: The Distribution Pharmacist.

3. Activity: Enter order information to Syspro and also provide a unique order number.

   Performed by: Order Typist.

4. *Activity:* Printing Picking lists. Produce a picking list per warehouse using Syspro. This activity will assign quantity appearing in the picking list to be put down as "Allocated Stock" in Syspro. The stock on hand in Syspro would not get reduced at this point in time.

   Performed by: Records Clerk.

   Document used / Generated: Warehouse specific Picking lists. See Appendix No.11 for a specimen.

5. *Activity:* Checking of Picking Lists and making amendments. The Picking Lists and Order Book are checked by a supervisor and any missing items added if any.

   Performed by: One of the 2 Pharmacist's Assistants (PA)

6. *Activity:* Picking products and updating stock balances. One of the PA will take the Picking List to the relevant warehouse clerk. This clerk will pick items according to the Picking List and adjust the stock balances in the Bin Card accordingly. Picked items are put in to boxes if they are small or loaded on to a pallet truck in case of bulky items.

   Performed by: The warehouse clerk and Work hands.

   Document used / Generated: Bin Card & Picking List.

7. *Activity*: Check picked items. After picking all items, they are checked for identity and quantity. Only then are warehouse clerks expected to seal boxes. However, this activity is not performed in the presence of the supervisor.

   Performed by: A Pharmacist's Assistant or a Chief Clerk. These persons supervise all warehouses and are not assigned to a particular warehouse or warehouses.

8. *Activity:* Seal boxes and transfer. Sealed boxes and bulky items are then moved by trolley (for light items) and (pallet truck) for heavy items to the dispatch bay. For very heavy items, the petrol operated fork lift truck is also used.

Performed by: Work hands

9. *Activity:* Product Assembly. Products from different warehouses contained in a particular order are brought to a single location at the dispatch area. Boxes are color coded using colored gum tape to represent the following.
   - Green – Represents security items which are small but expensive.
   - Red - Represents a Controlled item.
   - Blue - Represents a fridge item.

   Majority of boxes shipped do not carry any color codes.

   Performed by: Work hands and supervised by a Chief Clerk.

10. *Activity*: Enter information in Dispatch Log Book. Information on; customer name, date, person responsible for bringing the goods, number of boxes and signature of dispatch officer is entered in the Dispatch Log Book. A separate Log Book is maintained for each warehouse.

    Performed by: A clerk.

    Document used / Generated: Dispatch Log Book.

11. *Activity*: Customer Invoicing. The Order Book and all Picking Lists are forwarded to the Dispatch clerk to produce a customer Invoice using Syspro. Invoices are produced in duplicate and the original is sent with goods to the customer and the copy is filed at the CMS Archives. The Invoice will list all items ordered and available for issue at CMS.

    Once invoicing is completed, Syspro would credit the quantity under “allocated stock” and debit the Stock on hand. Accordingly the Syspro stock on hand would reduce by the quantity issued.

    Performed by : Records Clerk.

    Document used / Generated: The Invoice. See Appendix No. 12 for a specimen.

12. *Activity*: Return of document to customer. The dispatch section will send relevant documents to the customer along with goods.

    Performed by : CMS driver.

    Document used / Generated: Order Book, Invoice and the Picking Lists.

.

13. *Activity*: Loading to trucks. Finally products are loaded on to trucks according to a distribution schedule. There are 6 distribution routes served by CMS. No nets are

currently employed in CMS trucks to demarcate different shipments assigned to different customers. Hence, this increases the risk of consignments in transit getting mixed up.

Before departure, the "Schedule 7 Drug Delivery List" form is also expected to be filled considering the important nature of these drugs. See Appendix No. 13 for a specimen.

Before departing CMS, truck doors are sealed using a devise carrying a unique number. This seal is expected to be broken only by the next customer located on the distribution route and resealed thereafter.

Performed by: Work Hands are expected to load trucks, but Pharmacist's Assistants and Clerks also undertake this task. This work is supervised by a Chief Clerk.

Documents used: Delivery Book maintained for each truck.

2. Important Observations

1. Goods consigned to a particular customer are kept at a particular location within the dispatch area awaiting delivery. This area is currently unsecured. There are basically 5 types of goods stored here as listed below

- Bulky items loaded on to pallets.
- Boxes containing only one single item.
- Mixed boxes containing small amounts of different items.
- Unboxed single items such as large bottles containing liquids and other bulky packages.
- Controlled items which are drawn from warehouses just before the truck leaves CMS. Eg. ARVs, controlled items and fridge items etc.

2. Consignments destined for different customers are not separated by a net, while loading trucks to avoid possible mix ups at unloading points.

3. List of Key Issuing Documents

1. Customer Invoice – Syspro – Appendix No. 12
2. Order Book – Contains preprinted product names. Appendix No, 9.
3. Interim Order Form – Appendix No. 10.
4. Picking Lists – Produced by Syspro as per warehouse –Appendix No. 11..
5. Bin Cards – Appendix No. 8.

6. Dispatch Log Books per Warehouse.
7. Delivery Book – Maintained per truck.
8. Schedule 7 Drug Delivery List Appendix No. 13..

E. Development of a New Inventory Control System

There are several weaknesses associated with the current inventory control system employed at CMS. Some of these weaknesses were highlighted in the CMS assessment report undertaken by RPM Plus team in November 2003. Key weaknesses of the current system are again summarized below.

- It appears that values used by CMS as stock on hand and on order are very unreliable. This is not a fault of Syspro, but is a reflection of poor storekeeping practices.
- Routine decisions with regard to "when to order" and "how much to order" needs to be formalized and strengthened. For example, values used for Maximum Stock Levels are set across the board at 6 months of the expected monthly usage for all products in stock irrespective of the nature of the product.
- The basis for setting Maximum and Minimum stock levels are not very clear, as weightings assigned to consumption during lead time, buffer stocks and review periods are undefined.
- Maximum Stock levels and Reorder Levels in Syspro fluctuate continuously as these control parameters are dependant on issues made from CMS over the last 12 months.
- Lack of product classification systems such as; ABC Value Analysis, VEN analysis and Level of Use for setting inventory control parameters.
- Lack of proper policies and systems for setting buffer stocks at national, regional and health facility level.
- Weak systems for estimating drug needs.
- Syspro is unable to calculate the value of an order based on current contract price of an item needing reorder. To overcome this problem, Syspro inventory data is entered on to an Excel spread sheet containing product unit prices. This practice is causing additional work for initiating orders.
- Need for strengthening Syspro, the computer system employed for supporting inventory management and other key related functions at CMS.

The above issues have been taken in to consideration in developing the new inventory control system for CMS. The key features of systems proposed for CMS are described below.

This section briefly describes key operating characteristics of proposed systems for procurement, inventory control, distribution and related functions associated with the management of public sector drug supplies in Namibia.

Proposed systems basically cover 3 levels, namely, CMS at Windhoek, the 2 Regional Medical Stores at Rundu and Oshakati and Health Facilities. No attempt has been

made to describe current systems and procedures used at all 3 levels of the drug logistics system as these have been already described in the trip report based on the assessment undertaken in Namibia during November 2003 by MSH.

1. Key Features of Proposed Systems

Following are key features of proposed systems in respect of the 3 levels of operations. Inventory Control Systems described below for use at CMS have been thoroughly discussed and agreed with CMS senior staff.

a. At CMS

i. Inventory Control

Key Function: When to Order

Method: A Continuous Review, a Periodic Review system of inventory control or a mix of both systems could be employed for controlling drug inventories at CMS. Due to severe shortage of staff at CMS and rather long and variable lead times associated with drug procurement, it is recommended that a Periodic Review System of inventory control be employed. It would be useful to keep the review period short around 2 months, providing an opportunity to place orders 6 times a year. Accordingly, the inventory position of individual drugs should be reviewed on the first day of, January, March and May etc.

Key Function: How Much to Order

Method: It would be useful for the CMS inventory control system to use 2 control levels, namely a Minimum Stock Level (MINSL) and a Maximum Stock Level (MAXSL). The Inventory Position (IP) of any product in stock should be reviewed at each of the 2 monthly review periods and an order initiated only if the IP of a product is less than the MINSL.

IP = Stock in Hand + Stock On Order (In the absence of using a system of Back Orders)

MINSL = Average Monthly x (Lead Time + Review Period + Buffer Stock)
Consumption in months in months = 2 in months of consumption

MAXSL = Average Monthly x (Lead Time + Order Period + Buffer Stock)
Consumption in months in months. in months of consumption.
Set at 4, 6 or 12 depending on Set at 3, 1 & 0 based on VEN Analysis

ABC Value
Analysis

The Re-Order Quantity (ROQ) (Purchase Quantity), is the difference between MAXSL and the current IP at time of review. The use of MINSL will avoid placing of relatively small orders resulting in higher operating costs.

ROQ = MAXSL - IP

The MAXSL is a function of the Order Period (OP) in months. OP should be based on a most recent ABC Value Analysis performed for value of annual CMS issues and other factors. The following values are suggested for setting the OP.

For Class A Products, set OP = 4 Months of needs. (Ordering smaller quantities of expensive Class A drugs will ease CMS liquidity and help in lowering the average value of stocks held in inventory.
For Class B Products, set OP = 6 Months of needs.
For Class C Products, set OP = 12 Months of needs.

Similarly, Buffer Stocks (BS) should be set based on a VEN Analysis. Following levels are suggested.

For Class V Life Saving products, set Buffer Stocks = 3 Months of needs.
For Class E Essential products, set Buffer Stocks = 1 Months of needs.
For Class N Non Essential products, set Buffer Stocks = 0 Months of needs.

The above values have been provided only for illustrative purposes and actual Buffer Stock Levels and OPs need to be set on a case by case basis for individual products in consultation with CMS staff after taking in to account other important factors.

In practice, it will be useful to have 2 sets of MAXSL and MINSLs for each product, ie MAXSL1, MAXSL2, MINSL1 & MINSL2. The first will be a value set by CMS / an external source, while the second would be calculated by Syspro using above formulae. The second set of values will have the ability to override what has been set by Syspro and thus this number will be used for controlling inventories.

Key Function: Prepare an aggregate list of drugs needing reorder with corresponding order quantities at any of the 6 specific inventory review times.

Method: Employ Syspro to produce a report containing; drug code, drug name, re-order quantity, expected procurement value of individual items to be ordered and total value of all products needing re-order.

Information required for calculating above inventory control levels should be entered to Syspro Product database and updated regularly to reflect current operating conditions.

Accordingly, Syspro should automatically calculate the MAXSL2 and MINSL2 and display these in the product screen.

ii. Classification Systems

Key Function: To Classify Drugs According to Certain Classification Systems.

Method : All drugs are not of equal importance and hence it is necessary to classify drugs according to certain attributes to ensure their proper management. It is suggested that drugs are classified according to the 3 following methods using a 3 digit code in the Syspro Product Database.

First digit to signify the class of product according to ABC Value Analysis, based on annual value of issues made from CMS.

Second digit to signify the class of product according to VEN Analysis.

Third digit to signify the class of product according to Level of Use.

For eg. a code such as AV1 will signify that it is an A Class Drug from a financial point of view, V Class based on therapeutic benefits to patients and recommended for use only at level 1, the highest level of the health delivery system.

b. At Regional Medical Stores

1. Inventory Control

Key Function: When to Order

Method: It is suggested that initially a Pull System employing a Periodic Review System of inventory control be employed at Rundu and Oshakati Regional Medical Stores (RMS). This would enable the maintenance of an efficient transportation system using a limited and an aged fleet of trucks.

The Review Period (RP) should be kept short at 1.5 months, providing a RMS an opportunity to place orders 8 times a year. If ordering systems are used properly, the incidence of placing emergency orders as at present should significantly decline, thus eliminating the need for operating costly and unscheduled deliveries. Accordingly, the inventory position of individual drugs should only be reviewed on days specified for this purpose.

Key Function: How Much to Order

Method: The RMS inventory control system could probably use only one control level, namely a Maximum Stock Level (MAXSL). The Inventory Position (IP) of a product in

stock should be reviewed at each of the monthly review periods and an order initiated to make up the difference between MAXSL and the current IP of the product.

The need to employ a second control level similar to that proposed for CMS would need to be reviewed after visiting the RMS and taking in to account policies regarding buffer stocks at regional level and other factors.

IP = Stock in Hand + Stock On Order

MAXSL = Average Monthly x (Lead Time + Review Period + Buffer Stock)
Consumption in months in months = 1.5 in months of consumption.

Buffer stocks could be allocated at 2 months needs for Class V products, 1 month for Class E Products and zero for Class N Products. However, if storage capacity is a problem at CMS Windhoek, buffer stock at the 2 RMS could be further increased.

Unlike at CMS, the lead time between CMS and RMS is much lower and should be fixed at 0.5 months (2 weeks) as at present.

The Re-Order Quantity (ROQ) is the difference between MAXSL and the current IP at time of review.

ROQ = MAXSL - IP

The above values have been provided only for illustrative purposes and actual Buffer Stock Levels need to be set after discussing the policy on setting national, regional and health facility buffer stocks and service levels. This activity would need to be undertaken in consultation with MOHSS and CMS staff.

Information required for calculating above inventory control levels should be entered in to Syspro Product databases and updated regularly to reflect current operating conditions. Accordingly, Syspro should automatically calculate the MINSL1 & MAXSL1 as described for CMS and display this value in the product screen.

Key Function: Prepare an aggregate list of drugs needing reorder with corresponding order quantities at any of the 12 times specified for reviewing inventory.

Method: Employ Syspro to produce a report containing; drug code, drug name, re-order quantity, value of individual products needing re-order and total value of the drug order to be received from CMS.

Key Function: Based on products needing re-order, prepare Drug Requisitions to be issued to CMS.

Method: Employ Syspro to produce Drug Requisitions.

Once CMS and the Regional Medical Stores are electronically linked and could communicate freely and share their respective databases, it would be possible to place orders on behalf of the 2 RMS from CMS. This would avoid having to place drug requisitions from RMS level.

c. At Health Facilities

1. Inventory Control

There are basically three types of health facilities placing drug orders. The first type is Hospitals and Health Centers ordering drugs directly from CMS in Windhoek. The second type is Hospitals and Health Centers that order from the 2 RMS. The third category is clinics that receive drugs from a local hospital.

It may not be possible to introduce computerized inventory control and ordering systems at any of these levels in the short run. Hence, any new systems to be introduced should be very simple and operated manually.

Key Function: When to Order

Method: It is suggested that a Pull System employing a Periodic Review System of inventory control be used at health facility level.

The Review Period (RP) would vary from a day to a month depending on the type of facility. Accordingly, the lead time would also vary. Inventory positions of individual drugs should be reviewed on days specified for this purpose for different types of health facilities.

Key Function: How Much to Order

Method: A Maximum Stock Level (MAXSL) should be established for all individual products held in stock. The Inventory Position (IP) of any product should be reviewed at specified review times and an order initiated to make up the difference between MAXSL and the current IP of the product.

IP = Stock in Hand + Stock On Order

MAXSL = Average Daily Consumption x (Lead Time in days + Review Period in days + Buffer Stock in days of consumption.)

Buffer stocks should be allocated at appropriate levels according to VEN analysis.

The Re-Order Quantity (ROQ) is the difference between MAXSL and the current IP at time of review.

ROQ = MAXSL - IP

Key Function: Placing Drug Requisitions

Method: It is suggested that an appropriate ordering system using "Requisition Issue Forms" be used by the 3 types of health facilities mentioned above. The forms used currently for this purpose should be reviewed, and amended if necessary to reflect stock on hand at time of placing order and quantity requested from CMS / RMS / Hospital.

It is observed that some of the Clinics are currently not maintaining any stock records. Hence, it will be important to first introduce stock cards and provide training on their proper maintenance before attempting to introduce new inventory control systems.

F. Development of an Inventory Management Package (IMP) using Spread Sheets.

It appears that modifications proposed for Syspro would take some time to be completed. Hence, it may be possible to employ a suitable spreadsheet program to make key inventory control decisions such as "when to order" and "how much to order", pending completion of amendments to Syspro. With this in view, a user friendly spreadsheet program, titled "Inventory Management Package" (IMP) incorporating the inventory control model proposed for CMS was developed.

A specimen out put of IMP is included in Appendix No.14 IMP has been introduced to the CMS Procurement Pharmacist who is in charge of initiating new orders. IMP has the capacity to be used at any of the scheduled times recommended for reviewing CMS inventory and identifying; individual products that require re-order as per controls set by the inventory management systems, workout re-order quantities, value of individual items to be ordered and the value of the total order to be raised at any given point in time.

Use of IMP at CMS would bring about the following advantages.

- It is a spreadsheet program and hence its contents and calculations are easily understood by users.
- The program could be easily modified by the user to meet changing needs without any external assistance.
- By using IMP, it would make it easier for users to understand how the inventory control model actually works in practice.

IMP is a potential tool for controlling inventories. However, if a decision is made to implement it at CMS, it should be done so under the direct supervision of a RPM Plus staff member.

G. Strengthen Syspro's Capacity

In relation to new systems proposed for; Procurement, Inventory Control, Quantifying Drug Needs, Storekeeping and related functions, the type of changes that are necessary for Syspro has been identifie*d.* These needs have been discussed and communicated to Andy Marsden who is dealing with the type of changes required for strengthening Syspro.

Changes recommended are in the form of; additional fields to Syspro databases, use of formulas for setting various inventory control limits such as Minimum and Maximum Stock Levels and production of a range of Standard Management Reports to be produced using Syspro. These proposals are included in Appendix No 15.

H. Work Plan

A draft Work Plan has been developed for; inventory, warehousing and human resource management at CMS and RMS during calendar year 2004. This work plan is included in Appendix No 16 and lists key objectives, activities, a time frame, levels of effort for both RMP Plus and CMS. This work plan was discussed thoroughly with the Chief Pharmacists and the Procurement Pharmacist on 1.28.04 and 1.29.04 and some changes noted.

NEXT STEPS

Introduction of new systems and procedures proposed for inventory management and storekeeping practices have to go through a certain process and hence would take time to be completed. These systems would need to go through the steps of being developed, introduced to CMS staff, gaining acceptance, providing training and providing assistance in their implementation. In addition, the CMS organization structure would also need to be changed to support new functions recommended in this in order to operate CMS efficiently.

While the Work Plan included in Appendix No.16 describes a wide range of activities to be undertaken during the current year, the following functions would need to be undertaken on a priority basis for providing a firm foundation for the smooth implementation of the project.

A. CMS Stock Taking

Stock balances appearing in Syspro, Bin Cards and physical stock does not currently match for majority of products stored at CMS. Hence, it is most important that a physical stock taking of the entire range of products in stock be completed as soon as possible. This task has been assigned to the Accounting firm Ernst and Young, and is expected to be completed in March 2004.

It is important to note that no inventory control system, be it Syspro, the new inventory control model proposed in this report or any other would ever work based on poor information relating to what is in stock and on order. Hence, the successful completion of the physical stock count and updating Syspro and Bin Cards balances would be of little value, unless stock balances could be maintained accurately and up to date thereafter. This condition is paramount for the success of the project as a whole.

B Data Collection for Inventory Management

The inventory control systems proposed in this report or any other would require a large amount of data to be entered in to its various databases in order to make it fully operational. Some of this data can not be yet entered to Syspro without making some modifications. However, CMS should begin to look at how information such as ABC Value and VEN Analysis could be gathered systematically pending development of Syspro.

If the Inventory Management Package described in section 11F is to be immediately implemented as an interim measure, it would be useful to start performing ABC and VEN analysis as soon as possible.

However, ABC and VEN analysis should be properly undertaken, as they would have very significant financial and therapeutic impacts when utilized for making

key inventory management decisions. Hence, it is recommended that this activity be undertaken under the guidance of a RPM Plus staff member.

C. Strengthen Syspro's Capacity

Number of additional features to be included in Syspro has been identified to make drug management more efficient. Such changes in terms of; additional fields to product, supplier and customer master files, use of inventory control measures and development of standard management reports etc. has been conveyed to Andy Marsden, the MSH Information Technology Consultant. Andy Marsden is expected to communicate these changes to those who would be involved in making modifications to Syspro.

D. Human Resource Needs

Since everything is achieved through people, it would be important to develop a suitable organization structure for the CMS and RMS to support new systems and procedures and thereby maintain an efficient drug management system. Key functions to be performed by different units within the CMS have been identified and a draft organization structure based on these needs has been presented to the Chief Pharmacist for review. This organization structure needs to be further developed and finalized, job descriptions developed in relation to proposed systems and staff needs assessed.

RPM Plus is expected to fund positions of two new staff members, namely, a Pharmacy Management Advisor and an Information Technology Manager. These persons are expected to be stationed at CMS and are expected to be recruited during March 2004.

In addition to staff funded through RPM Plus, it is very important that vacant positions at CMS and especially that of the Distribution Pharmacist be filled as soon as possible.

E. Creation of a New Assembly Section

At present, there is no separate section for assembling products drawn from individual warehouses to be finally assembled and shipped to customers. This weakness leads to; lower productivity of dispatch operations, discrepancies between physical stock balances, Syspro balances and Bin Card balances in warehouses and poor supervision over picking of drugs and transfer to the dispatch section.

Hence, it is recommended that a separate Assembly Section be created for the exclusive purpose of assembling different individual products making up a given customer order. This proposal should also include the following.

- Setting up a secured area for storing assembled consignments awaiting delivery to customers. This would reduce the chances of different boxes getting mixed up and other losses.

- Separate staff comprising preferably of a Pharmacist's Assistant or a senior Clerk and 2 Work Hands should be allocated to the Assembly Section.

- It would also be necessary to build 2 work benches for simultaneously assembling, checking and sealing boxes. In addition, any tools and equipment needed for improving productivity of the assembly section should also be procured.

The space available at the dispatch section is rather limited. Hence, the layout of work benches, secured storage areas, corridors for movement of materials handling equipment and other types of work areas should be properly designed and demarcated. Please refer the Work Plan for a feasibility study recommended for; improving the CMS layout, materials handling operations and introduction of a computerized Warehouse Management Systems. It is best that this feasibility study be undertaken towards the end of year 2004, giving sufficient time for proposed inventory control systems to be fully implemented and gain steady state levels of operation.

KEY OBSERVATIONS AND RECOMMENDATIONS

Based on work undertaken during this visit and the assessment of CMS activities undertaken in November 2003, major observations made in respect of procurement, inventory management, warehousing and distribution are outlined below.

A. Major Observations

- The Receiving Section which is an integral part of the distribution function is currently under the Procurement Section and not under distribution. This is contrary to standard operating procedures.

- Purchase Orders are raised through Syspro in respect of one item per PO.

- POs and GRNs are both created using a single set of preprinted forms using Syspro at the time of initiating orders at the Procurement Section. At the time of receiving supplies, the quantity received is manually entered on to the GRN.

- Currently, the Procurement Section is performing many key distribution functions such as order initiation. This has severely burdened the Procurement Section.

- Similar to POs, GRNs contain information on only one product. Further, different batches of the same drugs delivered is recorded on a different GRN. However, different batches are not always stored separately to make issues based on First Expiry First Out (FEFO).

  Above procedures have greatly increased the amount of paper work, lowered productivity of CMS staff attached to procurement and other sections and increased stock holding costs.

- The CMS layout with 9 separate warehouses, has made it necessary to divide the picking list in to 9 different lists.

- Large discrepancies are frequently observed between stock balances appearing in Syspro, Bin cards and physical stock. Poor maintenance of stock cards, posting errors, pilferage and other malpractices could have contributed to this situation. What ever the reasons, these discrepancies are creating huge inventory control problems at CMS.

- The constitution of Syspro inventory control parameters such as Maximum and Minimum Stock levels is unclear and varies continuously with time in response to changes in product demand. This situation has created big problems in managing inventories.

- Syspro in its present form does not take in to account the number of days a product has been out of stock at CMS in quantifying average consumption over

the most recent 12 month period. Further, any other factors affecting demand can not be considered in estimating product needs. These factors have made drug estimation using Syspro to be weak.

- Lay out of the CMS in to 9 individual warehouses for storing different types of products, poor methods employed for dispatching, warehousing, use of documents, lack of a central assembly section and effective supervision has lowered productivity levels and increased the risk of stock losses. Lack of a central assembly section has increased the incidence of losses after packing, checking and sealing of boxes have taken place at individual warehouses.

- There is no system of continuous stock checks at CMS by an internal or external auditor. This has given rise to large discrepancies to surface between physical stock, stock records, balances generated by the computer system and be unnoticed for long periods of time.

- Lack of a Distribution Pharmacist, has greatly burdened the Chief Pharmacist making it difficult for him to focus on; development issues, operations planning, monitoring and supervising key CMS operations. Further, the lack of an Internal Audit at CMS has also prevented the deployment of much needed operational and financial checks and balances.

B. Major Recommendations

Based on above key observations and other weak spots of CMS drug management systems, following key recommendations have been made with a view to improving CMS operations.

1. Strengthen Inventory Control

Measures recommended for strengthening inventory management has been described in section 11E and the Work Plan illustrates key activities to be undertaken. Some of these key activities have been further described below.

- Start collection of information that would be needed for introducing new inventory control systems. This would include carrying out an ABC Value Analysis based on CMS Value of Issues, Purchases and Stock in Hand as part of the preparation for introducing new inventory control systems.

- Similarly undertake VEN analysis on the CMS product range.

- Initiate discussions on policies on buffer stocks and service levels to be maintained at national, regional and health facility levels.

- Monitor progress made on the physical stock taking, feed correct data to stock cards and Syspro and thereafter maintain proper balances through the introduction of continuous stock checks, increased supervision and monitoring.

2. **Strengthen Syspro to Support New Inventory Control Systems**

Identify changes required on Syspro to support new inventory control and related systems and ensure their proper completion. This activity is being performed by RPM Information Technology Consultant Andy Marsden.

3. Strengthen Receiving, Storing, and Dispatching Operations

Following key interventions would be useful for improving productivity of receiving, dispatching and warehousing operations and minimizing stock losses at CMS. However, a package of activities needed for strengthening warehouse operations including an improved stores CMS layout would only be available after a proper feasibility study recommended in the Work Plan towards the end of year 2004 is completed.

- Print GRNs in 3 copies at the time of receiving supplies and enter quantity received and an outstanding balance if any, directly to Syspro without entering by hand as at present. Further, a GRN should be printed per warehouse, but made to include all products stocked at a given warehouse. Unlike at present, issuing POs and GRNs should be treated as separate activities.

Information contained in a GRN and the Transfer Document is different. Information such as, the expiry date and batch number and warehouse name appears on the Transfer Document, but not in the GRN. It is proposed that the GRN format be modified to accommodate additional information found in the Transfer Document. This way, it would be possible to issue the Transfer Document directly to the respective warehouse for use and to be filed thereafter at the warehouse. This way it would not be necessary to issue the full set of supplier documents to the warehouse as at present. Thus, time could be saved and copies of the GRN could be dispatched to the Accounts Section without delay.

The issue of Purchase Order Receipt should be discontinued as it apparently serves no useful purpose.

- Create a centralized assembly section, a secured storage facility for holding supplies awaiting delivery and employ staff as outlined in section 111E. This practice should increase productivity of the dispatch section and also considerably minimize stock losses.

- Make individual warehouse clerks accountable for stock losses and for maintaining proper stock balances through improved supervision and appropriate

disciplinary action. This would be particularly important when Ernst and Young complete the stock taking activity.

- Employ a system of continuous stock checks at all warehouses, focusing on high value class “A” products.

- Identify pallet trucks and other materials handling equipment needing repair and undertake such repairs. If any new equipment is required, these should also be identified.

- Procure and install nets in all trucks for separating consignments belonging to different customers as a means of avoiding mixing of orders belonging to different customers at unloading points.

- Once all systems and procedures have been developed, prepare Operations Manuals based on new systems and provide training to all concerned staff.

Appendix No. 15

Proposed Changes to Syspro

A**.** Changes proposed for improving Syspro Product, Supplier and Customer files are described below. These changes have been communicated to Any Marsden.

1. Suggested additions to the Current Syspro Product Master File

It would be useful to include the following additional fields in the Syspro Product Master File.

-. Issue Units. eg. Tabs, caps, pack of 12 etc.

- Strength / Size of drug or medical supplies.

- Dosage Form, such as tablets, capsules, suppositories, creams & lotions etc. (T/C/S/C/L)

- Product category, Pharmaceuticals, Clinical Supplies, X-ray and Other Products. (P/C/X/O)

- Secondary Product Category : eg. ARVs, PMTC, TB & Malaria etc.

- Standard Pack Size expressed in Issue Units.

- Current Supplier :

- Unit product price in N$ based on current contracted price.

- Classifications: 3 digits.

First Field either an A, B or a C for ABC Value Analysis
Second Field either a V, E or a N for VEN Analysis
Third Field either a 1, 2, 3, 4 & 5 to denote the Level of Use.

2. Suggested additions to the Current Syspro Supplier Master File

- Type: Distributor, Manufacturer & other
- Key Products: Key products offered
- Inception : Year
- Pre-qualified : Yes /no
- Last GMP Audit: mm/yy
- Performance Rating: ABC
- Purchases YTD : N$
- Purchases Last Year : N$

3. Suggested additions to the Current Syspro Customer Master File

- Type :
- # of Beds :
- Province / Zone:
- District :
- Distance from Windhoek : kms
- Mark Up : %
- Delivery Route :
- Accessibility:
- Budget : N$
- % of Budget Used YTD : %

B. Formulae for CMS Syspro calculations.

a. Ref. C. = MAXSL 1 = T x U (M + S +R)

b. Ref. F. = Minimum Re-order Level = T x U (M + J + R)

J could be fixed at 2 months for CMS and 1.5 months for the 2 RMS.

c. Ref. T. This value would be generated by Syspro using historical data on what has been issued out of CMS in the past. We have 2 options for generating this information as outlines below.

i. Syspro will ask the operator to enter the following information.

Product Code.

Start Date ie. From (mm/dd/yy) – To (mm/dd/yy), to specify a specific period of issue.

Syspro should access the transaction file, sum all issues for the product less returns if any for the specified period.

Estimated monthly
consumption = T = Total number of issues made x 30

(Number of days in selected period - # of days item out of stock)

ii. Or, Syspro should ask the operator to enter the following information.

Product Code.

Ask the operator to specify the complete number of months to be considered in working out a value for the Estimated Monthly Consumption. For eg. a number such as 12 will make Syspro to analyze data going back to 12 months.

Syspro should access the transaction file, sum all issues for the product less returns if any, for the specified period.

Estimated monthly
consumption = T = Total number of issues made x 30

(Number of days in selected period - # of days item out of stock)

It is suggested that the value appearing on the screen for T ie. Estimated Monthly Consumption should be = U x V and be calculated using any one of the methods outlined above. Forecasting drug needs should be a separate activity performed periodically or as when needed for a specific product, using a different Forecasting Menu.

d. Ref. V. = System Suggested Order Quantity = (D-K-L) when (K + L) <= G.

C. Drug Management Reports

Following are some Drug Management Reports recommended for use at CMS as well as RMS levels using Syspro. This would involve the production of standard management reports on a regular basis using Syspro, by employing a menu driven system for printing.

Suggested CMS Reports

- Distribution reports by country / zone / province / district for individual products by quantity and value.
- Distribution reports for individual facilities / type of facility listing individual products by quantity and value.
- Information on quantity and value of shipments made from CMS on a quarterly basis in respect of any of the last 8 quarters.

- Estimate the Average Monthly Consumption of products over a specified number of quarters, adjusting for stock out periods if any.
- Product Issue Report containing names of all facilities that have received a specific product over a given period of time, date of issue, issue value, and invoice number. This report will be useful in case of product recalls.
- Purchase Orders / Receipts Report.
- Product Receipt Report.
- Supplier Product Report.
- Inventory Position Report. Provides information on quantity on hand, quantity on order and the Inventory Position of a given product or all products.
- Inventory by Lot & Expiry Report
- Drugs at Risk Report
- ABC Value Analysis for all CMS issues or to a particular facility.
- VEN Analysis report.
- Stock Return by Value Report.
- Stock Return by Product Report.
- Out of Stock Report.
- Slow Moving Stock Report
- Lead Time Analysis Report
- Goods Received Notes
- Stock Valuation Report.
- Estimated Value of Order to be Procured.
- CMS Performance Report.
- Any other reports as required.

Suggested RMS Reports

- Distribution reports by zone / province / district for individual products by quantity and value.
- Distribution reports for individual facilities / type of facility listing individual products by quantity and value.
- Information on quantity and value of shipments made from RMS on a quarterly basis in respect of any of the last 8 quarters.
- Estimate the Average Monthly Consumption of products over a specified number of quarters, adjusting for stock out periods if any.
- Product Issue Report containing names of all facilities that have received a specific product over a given period of time, date of issue, issue value, and invoice number. This report will be useful for making any product recalls.
- Product Receipt Report.
- Inventory Position Report. Provides information on quantity on hand, quantity on order and the Inventory Position of a given product or all products.
- Inventory by Lot & Expiry Report
- Drugs at Risk Report
- ABC Value Analysis for all RMS issues or to a particular facility.
- VEN Analysis report.
- Stock Return by Value Report.

- Stock Return by Product Report.
- Out of Stock Report.
- Slow Moving Stock Report
- Goods Received Notes
- Stock Valuation Report.
- RMS Performance Report.
- Any other reports as required.

Health Facility Reports

Due to the acute shortage of trained staff and lack of computer facilities at health facility level, the number of drug management reports that could be successfully developed on a regular basis will be rather limited. Hence, it is suggested that facility reports be produced using Syspro operated at CMS / RMS levels, thus eliminating the need for facility level staff to engage in this activity.